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Butterflies of Xinjiang Province, China

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Abstract We have drawn up a list of Xinjiang butterflies which were caught by Huang and are now preserved in Xinjiang University. In the list, 105 species are reported and two new species and 22 new subspecies are described. This paper is a preliminary work for more perfect list in future.

Key words Xinjiang butterfly, Tianshan, Altai, Kunlun, Aljinshan, Sajan, grassland, taxonomy.

In the present paper, we give a report on the butterflies of Xinjiang Province, China, which Huang has caught between 1980 and 1989. Based on the collected material, we enumerate 105 species, among which two new species and 22 new subspecies have been found*. Part I deals with the descriptions of new taxa with the revision of a few scientific names. Part II is the list of the whole species (data of new taxa are abbreviated; see their descriptions for detail). All the specimens including the types are preserved in the Biological Laboratory of Xinjiang University, except the material from Sajan.

Part I. Descriptions of new species and subspecies

Papilio machaon baijianensis ssp. nov. (Fig. 1)

Holotype, ♂, length of forewing (LF) 37.6 mm. Huocheng, Tianshan, 2300 m, subalpine grassland. July 1982. Paratypes. 1 ♂, LF 42 mm. Huocheng, 1700 m. July 1985. 10 ♂, LF 37-43 mm, 10 ♀, LF 37-43.5 mm. Gonglasisi, Tianshan, 1600-1800 m. July 1985. 1 ♂, LF 37.6 mm, 6 ♀, LF 36.5-40.5 mm. Halai, Altai, 1600-2000 m, glassland in forest zone. July 1985.

♂. Upperside—Forewing: the submarginal black band becomes broad towards tornus gradually, but not prominent, and becomes somewhat narrow in space 1. Hindwing: the bluish black band is fairly distant from the cell, so the yellow band out of the cell is a little broad. The tail is long as in ssp. *chinensis* Verity, 1905. Female as in the male.

Iphiclus podalirius xinyuanensis ssp. nov. (Fig. 2)

Holotype, ♂, LF 36 mm. Xinyuan, Tianshan, 800 m, wild fruit forest. July 1984. Paratypes. 4 ♂, LF 34-38 mm, 5 ♀, LF 37-39 mm. Same data as holotype.

From Chinese territory, 2 subspecies of *podalirius*, viz. *podalirius* and *centralasiae*, are known, but differs from them as follows. Forewing: the outer margin is fairly concaved from apex to spaces 4 and 5. The marginal black band and submarginal black line are alike concave. The short and long black bands traversing the cell become abruptly broad towards costal margin and much prominent. The ground colour of both wings is conspicu-

*A new subspecies from Sajan is also described.

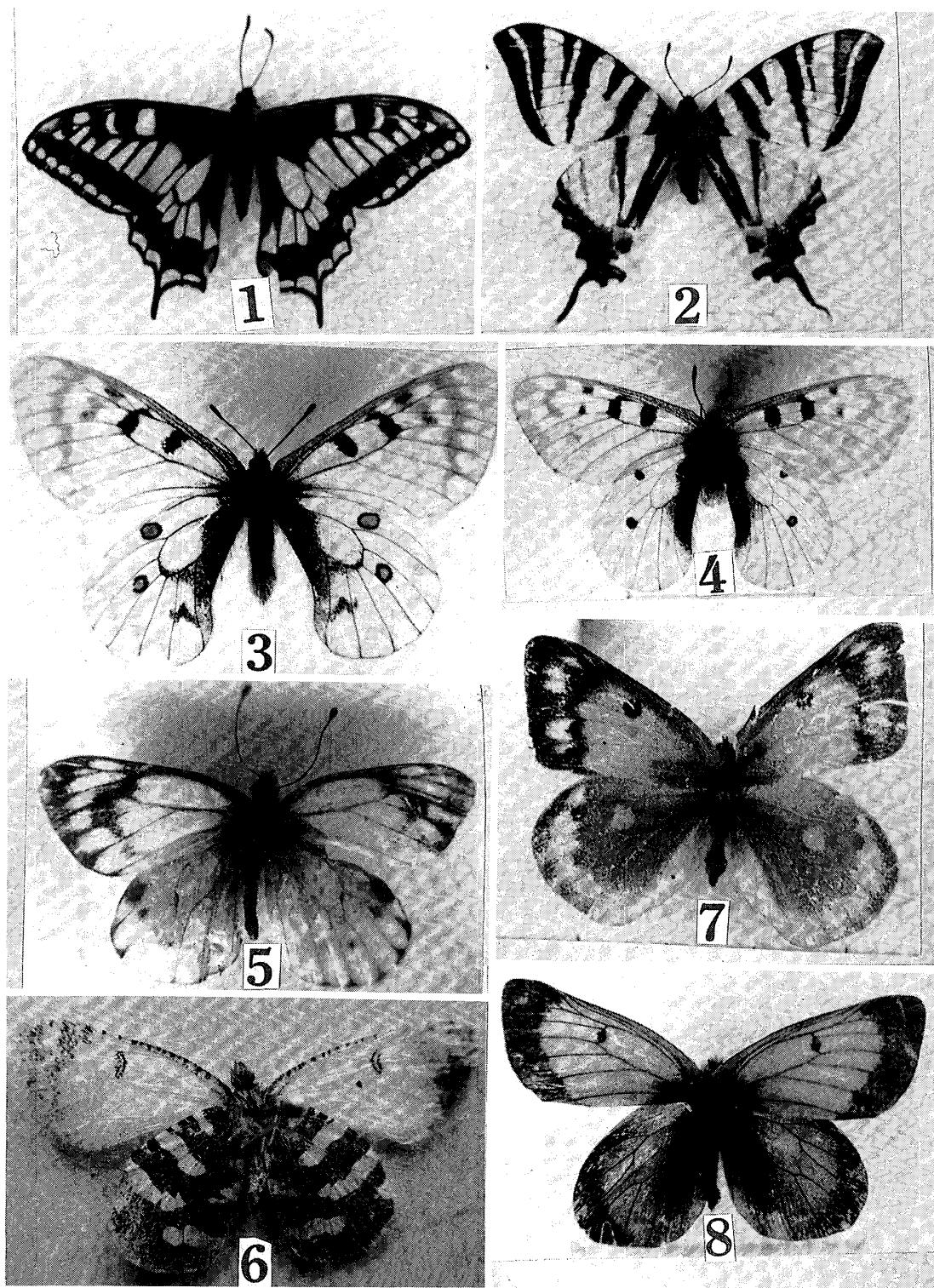


Fig. 1. *Papilio machaon baijianensis* ssp. nov. ♂ Length of forewing 37.6 mm. Fig. 2. *Iphiclus podalirius xinyuanensis* ssp. nov. ♂ 36 mm. Fig. 3. *Parnassius ariadne jiadengyuensis* ssp. nov. ♂ 37.5 mm. Fig. 4. *Parnassius phoebus halasicus* ssp. nov. ♂ 30.5 mm. Fig. 5. *Synchloe kozlovi aljinensis* ssp. nov. ♂ 24 mm. Fig. 6. *Zegris zhungelensis* sp. nov. ♂ 19.5 mm. (Underside) Fig. 7. *Colias chrysantheme yangguifei* ssp. nov. ♀ 20 mm. Fig. 8. *Do.* ♂ 20 mm.

ously tinged with yellowish tone.

***Parnassius phoebus halasicus* ssp. nov. (Fig. 4)**

Holotype, ♂, LF 30.5 mm. Halasi, Altai, 1700–1900 m, grassland in forest zone to subalpine grassland. July 1985. Paratypes. 7 ♂, LF 28.5–31 mm, 2 ♀, LF 30–32 mm. Same data as holotype. 1 ♂, LF 31 mm. Hami, S. E. Altai, 1200 m, July 1983.

This species has not hitherto been recorded from Chinese central Asia. Similar to ssp. *intermedius* Ménétriers, 1849, but differs from it in the following characteristics. ♂. Upperside—Forewing: the submarginal blackish band extends from apex to space 3, but it is much faint in spaces 3 and 4. The black markings in the base of spaces 5 and 8 become black patches. Hindwing: the two red markings are fairly small. In the other subspecies, the black scales appear on the veins from 1 to 6 near outer margin, but in this subspecies such black scales are not present. Generally the blackish markings of both wings are least developed in *phoebus* taxa.

***Parnassius ariadne jiadengyuensis* ssp. nov. (Fig. 3)**

Holotype, ♂, LF 33.5 mm. Jiadengyu, Altai, 1380–1700 m, grassland in forest zone. July 1983. Paratypes. 19 ♂, LF 31.5–36 mm, 6 ♀, LF 33–34 mm. Same data as holotype.

Upperside—Forewing: the blackish markings of spaces 5, 6 and 8 are less conspicuous. The black marking of the space 9 above discocellular black bar is less developed. Hindwing: the submarginal area is clear white. Underside—Hindwing: the slender band of halfmoons is transparent. The first certain record of *ariadne* in the Chinese territory.

***Synchloe kozlovi aljinensis* ssp. nov. (Fig. 5)**

Holotype, ♂, LF 24 mm. Xashidaban, Aljin, 3600–3800 m, high cold desert. June 1984. Paratypes. 2 ♂, LF 24–25 mm, 2 ♀, LF 27–28 mm. Same data as holotype.

From the nominotypical subspecies differs in some points. ♂. Upperside—Forewing: the black marking of apex is much broader, so that the white area of space 6 becomes extremely narrow. Underside—Hindwing: the greyish green area is somewhat narrow, so that the marginal yellowish white area is a little broader.

***Pontia callidice halasia* ssp. nov. (Fig. 12)**

Holotype, ♂, LF 24.5 mm. Halasi, Altai, 1400–1700 m, grassland in forest zone. July 1980. Paratypes. 58 ♂, LF 23–26 mm, 32 ♀, LF 24–27.5 mm. Same data as holotype. 15 ♂, LF 23–26 mm, 13 ♀, LF 24–26 mm. Urumqi, Nanshan, Tianshan, 1700–2000 m, grassland. July 1981. 2 ♂, LF 21–24 mm, 1 ♀, LF 21 mm. Beidun, Altai, 400 m, plain forestry center. July 1983. 2 ♀, LF 21–24 mm. Tacheng, 400 m, farmland, Green Prefecture. July 1983. 14 ♂, LF 21–26 mm, 4 ♀, 22–25 mm. Huocheng, 900–1700 m, mountain grassland in forest zone. July 1981. 4 ♂, 24–26 mm. Hejin, Tianshan, 2300–2400 m, mountain grassland. July 1987. 1 ♂, LF 22 mm, 6 ♀, LF 24–26 mm. Gonglaisi, Tianshan, 1400–1700 m, mountain grassland in forest zone. July 1987. 1 ♀, LF 23 mm. Tulufan, –100 m, farmland, Green Prefecture. July 1985.

From ssp. *callidice* Hübner, 1799 as well as ssp. *kalora* Moore, 1865, this is distinguished by the following points. ♂ ♀. Underside—Hindwing: greenish marking around the veins and the marginal chevron greenish markings are narrower. The yellowish area in the cell is broader.

***Zegris zhungelensis* sp. nov. (Fig. 6)**

Holotype, ♂, LF 19.5 mm. Zhungel Basin, 450 m, desert. July 1985. Paratypes. 1 ♂, LF 19.5 mm, 2 ♀, LF 18.5-19.5 mm. Same data as holotype.

Closely resembles *Zegris fausti* Christoph, 1877, from Fergana and Afganistan, but separable from it in some points. ♂♀. Underside—Hindwing: 1) the ground colour is green, not yellowish as in *fausti*, 2) from costa to apex, the four white prominent broad bands run parallel with each other, but in *fausti*, except for white short band near the base, the other three white bands approach in their tips, particularly the third band and fourth short one draw closely near, often connected.

Male genitalia (Fig. I). Uncus radically much tapered at tip; valva, costal process remarkably pointed.

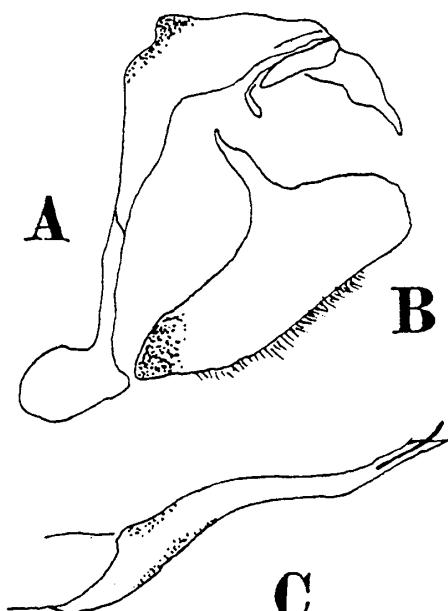


Fig. I. *Zegris zhengelensis* sp. nov., ♂ genitalia (A. ring, B. valva, C. phallus).

***Anthocaris cardamines bambusaroides* ssp. nov. (Figs. 9, 10)**

Holotype, ♂, LF 21 mm. Halasi, Altai, 1300-1700 m, grassland in forest zone. July 1985. Paratypes. 22 ♂, LF 18-22 mm, 20 ♀, LF 20-22 mm. Same data as holotype. 17 ♂, LF 20-22 mm, 14 ♀, LF 20-24 mm. Tuoli, Tacheng, 1300-1500 m, grassland in forest zone. July 1983. 5 ♂, LF 20-22 mm. Ganjiafu, Zhungel Basin, 300 m. May 1986.

♂. Upperside—Forewing: the red area of apex is more than two-thirds, so broader than in the other subspecies. ♂♀. Underside—Hindwing: reticulate greenish markings between the veins or on the veins are well developed. The wings are somewhat larger in size.

***Colias chrysotheme yangguifei* ssp. nov. (Figs. 7, 8)**

Holotype, ♂, LF 20 mm. Aqikfu, Aljin, East Kunlun, 4350-4400 m, high cold grassland. July 1984. Paratypes. 4 ♂, LF 19-21 mm, 2 ♀, LF 19-20 mm. Same data as holotype.

Separable from ssp. *andre* Hemming (= *sibirica* Grum-Grshimailo) in some points. ♂.

Upperside—Forewing: the marginal black band is broader, the discocellular black streak smaller. Hindwing: the marginal black band is broader. Underside—Forewing: the outer margin is heavily tinged with greenish. Hindwing: the ground colour is heavily tinged with green. The red streak near costa in space 8 is remarkable in ssp. *andre*, but much faint in this new taxon. The basal area is deep green from costa to inner margin. ♀. Upperside—Forewing: the marginal black band is slightly broader. Hindwing: the marginal black band is perfectly interrupted in each space 2-5, and submarginal yellow band is broader. Underside—Fore- and hindwings: the greenish areas are deeper than in ssp. *andre*.

***Colias alpherakyi aljinshana* ssp. nov. (Fig. 11)**

Holotype, ♂, LF 24.5 mm. Aljinshan, 4300 m, high cold desert mountain. July 1984. Paratypes. 2 ♀, LF 25.5-26 mm. Same data as holotype.

Differs from ssp. *chitralensis* Verity, 1905 in the following characteristics. ♂. Upperside—Forewing: the marginal black band is somewhat narrower, the yellowish marking in this black band is larger. Hindwing: the marginal black band is interrupted in each space. The inside of the submarginal row of yellowish marking is dusted with deep green scales. The space 1 except anal angle is almost deep green. Underside—Fore- and hindwings: the greenish areas in ssp. *chitralensis* are more deep green, particularly in the base of hindwing. In forewing, the black discocellular streak and the black marking of space 1 become minute and those in spaces 2 and 3 are lacking. It may be possible to raise this taxon to a specific rank.

***Erebia cyclopius sinopius* ssp. nov. (Fig. 16)**

Holotype, ♀, LF 25.3 mm. Jiadengyu, Altai, 1400-1500 m, grassland in forest zone. June-July 1983. Paratypes. 4 ♀, LF 24-26 mm. Same data as holotype.

Besides the nominotypical race, ssp. *pseudowanga* Murayama, 1969 from North Korea has hitherto been known for this species. ♀. Upperside—Forewing: the yellow ring of ocellus is broader. Underside—Hindwing: the greyish white bands in central and basal areas are prominent and wider. The ground colour of both upper- and underside are dark brown.

***Lasiommata maera weiwuerica* ssp. nov. (Figs. 13, 14)**

Holotype, ♂, LF 22.5 mm. Jiadengyu, Altai 1400-1700 m, grassland in forest zone. Sept. 1983. Paratypes. 8 ♂, LF 21-25 mm, 5 ♀, 20-25.5 mm. Same data as holotype.

♂. Upper- and underside—Hindwing: the five orange edged ocelli near outer margin, and three middle ocelli are large. Underside—Forewing: the blackish brown streak out of the cell and that of the base in space 3 are connected in the nominotypical subspecies, but slipped each other in this subspecies. Female as in the male.

***Coenonympha semenovi jiadengyuica* ssp. nov. (Fig. 15)**

Holotype, ♂, LF 17.5 mm. Jiadengyu, Altai, 1380 m, grassland in forest zone. July 1981. Paratypes. 2 ♀, LF 17-19 mm. Same data as holotype.

Closely allied to the nominotypical subspecies, but differs from it in some points. Upperside—Fore- and hindwings: the ground colour is greyish brown, bearing no white markings. Underside—Forewing: the inner black edged white band runs in submarginal

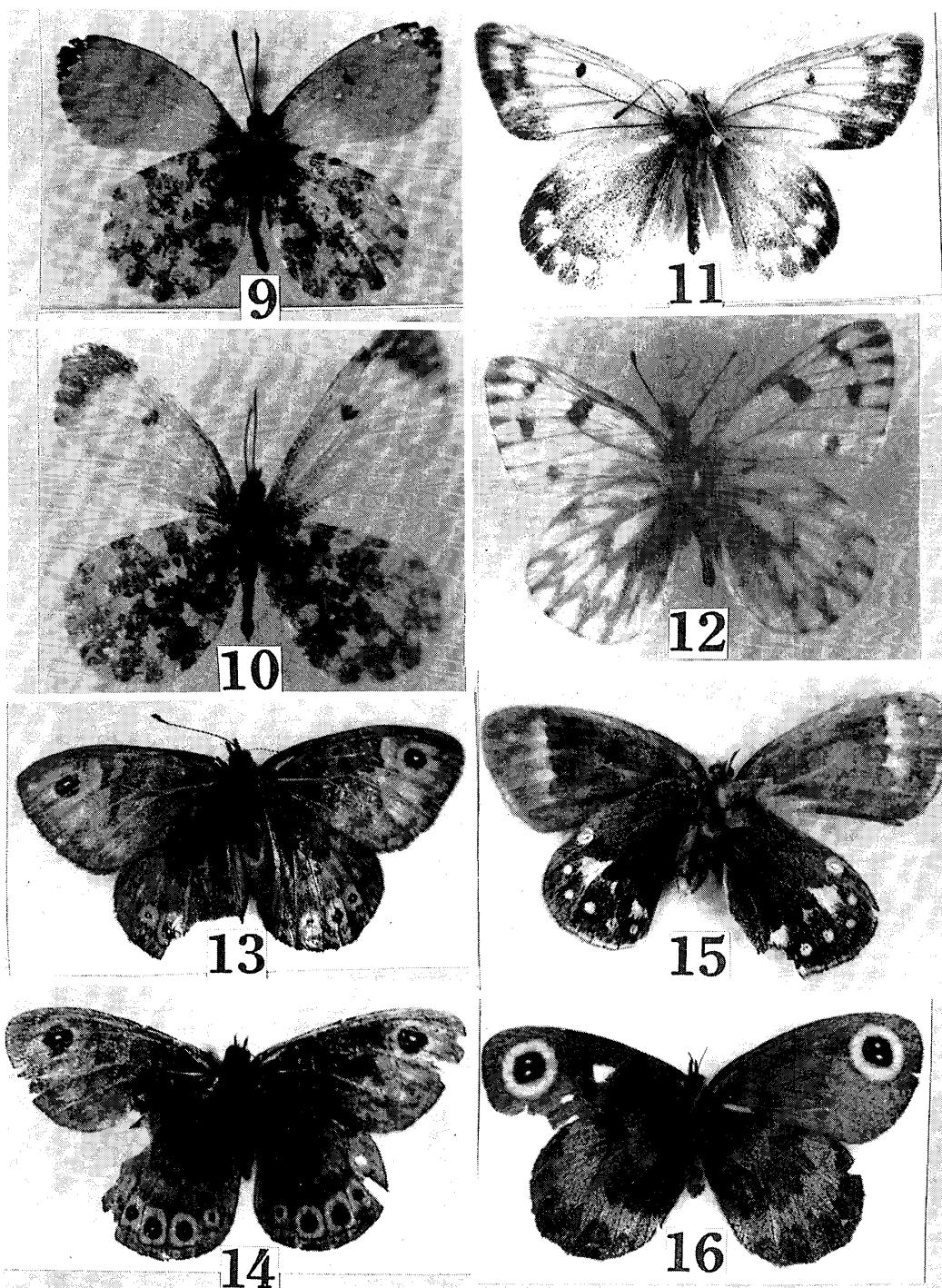


Fig. 9. *Anthocaris cardamines bambusaroides* ssp. nov. ♂ 21 mm. Fig. 10. *Do.* ♀ 20 mm. Fig. 11. *Colias alpherakyi aljinshana* ssp. nov. ♂ 24.5 mm. Fig. 12. *Pontia callidice halasia* ssp. nov. ♂ 24.5 mm. (Underside) Fig. 13. *Lasiommata maera weiwuerica* ssp. nov. ♂ 22.5 mm. Fig. 14. *Do.* ♀ 25 mm. Fig. 15. *Coenonympha semenovi jiadengyuica* ssp. nov. ♂ 17.5 mm. (Underside) Fig. 16. *Erebia cyclopius sinopius* ssp. nov. ♀ 25.3 mm. (Underside)

area. A white spot appears near apex. Hindwing: the each space from 2 to 7 in submarginal area bears a white spot. A small white marking is near the base of space 4, a somewhat large white marking in the middle of space 2, much large triangular white marking near the base of space 5. It may be possible to regard this taxon as a specific rank in future.

***Argyronome laodice huochengice* ssp. nov. (Fig. 18)**

Holotype, ♂, LF 35 mm. Huocheng, Tianshan, 1700 m, grassland in forest zone. July 1982.

♂. The upperside black markings are generally smaller than in ssp. *rudra* Moore, 1857 from Kashmir, N. W. India. The important characteristics are in the following points. Underside—Hindwing: the greenish ground colour from the base to central area is much clear. The two brownish lines traverse from costal margin to the end of the cell and space 2. The silver line is not so remarkable.

We notice the same characteristics also appearing in the Sichuan specimens, and the new name probably represents the south western Chinese form.

***Clossiana euphrosyne orphanoides* ssp. nov. (Fig. 17)**

Holotype, ♂, LF 19.9 mm. Jiadengyu, Altai, 1380–1600 m, grassland in forest zone. July 1983. Paratypes. 21 ♂, LF 18–21 mm, 14 ♀, LF 19–23 mm. Same data as holotype. 1 ♂, LF 17 mm. Gonglaisi, Tianshan, 1700 m, grassland in forest zone. July 1989. 13 ♂, LF 18–20 mm, 14 ♀, LF 20–24 mm. Urumqi, Nanshan, Tianshan, 1700–2300 m, subalpine grassland in forest zone. July 1981.

Resembles ssp. *orphanus* Fruhstorfer, 1907, but differs from it in the following points. ♂ ♀. The upperside black markings are less developed. Underside—Forewing: the apical area is broadly light yellow. Hindwing: the postdiscal area is more broadly light yellow. The yellow marking near base of space 8 is constricted in the middle.

***Melitaea scotosia weiwueria* ssp. nov. (Fig. 19)**

Holotype, ♂, LF 22.5 mm. Jiadengyu, Altai, 1400 m, grassland in forest zone. Paratype. 1 ♂, LF 24 mm. Same data as holotype.

♂ ♀. Upperside—Forewing: the marginal waving black marking is slenderer. The other markings or spots are all extremely less developed. Hindwing: a row of black spots from costa to the middle of space 2 leaves slight traces. The basal area is light, not blackish as in the nominotypical subspecies. Underside—Hindwing: there is no yellow pupilled black-edged marking in cell as in the nominotypical subspecies.

***Melitaea cinxia oasis* ssp. nov. (Fig. 20)**

Holotype, ♂, LF 19 mm. Jiadengyu, Altai, 1380–1600 m, grassland in forest zone. July 1983. Paratypes. 22 ♂, LF 18–20.5 mm, 12 ♀, LF 19–22 mm. Same data as holotype.

From ssp. *tschujaca* Seitz, 1909 from Altai Mts. (USSR territory), differs in the following points. ♂. Upperside—Forewing: the black markings are less developed, having much light appearance. Hindwing: the marginal orange marking of each space is reduced and becomes a slender halfmoon. The black patch in submarginal orange marking of each space is prominent. This patch in female is more distinct.

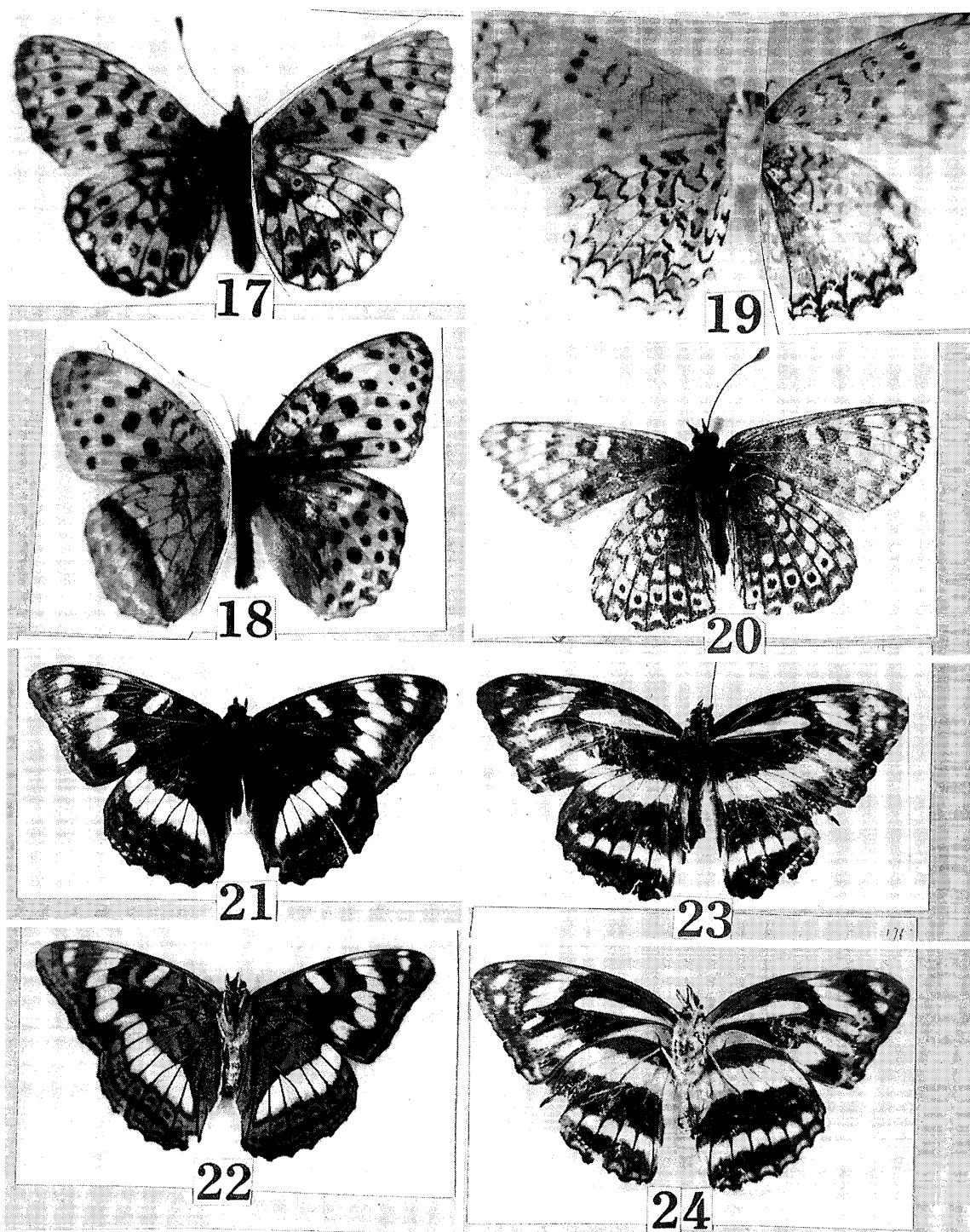


Fig. 17. *Clossiana euphrosyne orphanooides* ssp. nov. ♂ 19.9 mm. (Left upperside, right underside)
Fig. 18. *Argyronome laodice huochengice* ssp. nov. ♂ 35 mm. (Left underside, right upperside)
Fig. 19. *Melitaea scotosia weiwueria* ssp. nov. ♂ 22.5 mm. (Left underside, right upperside)
Fig. 20. *Melitaea cinxia oasis* ssp. nov. ♂ 19 mm. Fig. 21. *Limenitis populi halasiensis* ssp. nov. ♂ 41.5 mm. Fig. 22. *Do.* (Underside) Fig. 23. *Athyma jina huochen-gica* ssp. nov. ♂ 32 mm. Fig. 24. *Do.* (Underside).

***Limenitis populi halasiensis* ssp. nov. (Figs. 21, 22)**

Holotype, ♂, LF 41.5 mm. Halasi, Altai, 1400-1600 m, grassland in forest zone. July 1983. Paratypes. 3 ♀, LF 41.5-42.5 mm. Same data as holotype.

♂. Larger. Upperside—Forewing: the white markings of spaces 1-6 and small white markings of spaces 5-7 towards apex are well developed. Hindwing: the discal white band extremely broader than in the European specimens. Underside—Fore- and hindwings: the white markings as well as white band are broad as on upperside. Particularly, the discal band is so prominently developed that the submarginal reddish brown band is a little narrow, its pupilled black spots are large in spaces 2-5. The black edge of both sides of reddish brown band is deep and thick. In ssp. *szechwanica* Murayama, 1981 from the Province Sichuan, the white band and markings are most vanished, on the contrary, the new subspecies is a form with the white marking most developed. Both taxa make a conspicuous contrast.

***Athyma jina huochengica* ssp. nov. (Figs. 23, 24)**

Holotype, ♂, LF 32 mm. Huocheng, Tienshan, 1500 m, grassland in forest zone. July 1981.

Similar to ssp. *jinoides* Moore, 1890 from Provinces Sichuan, Yunnan, etc., but separable from it in some characteristics. Upperside—Forewing: the white marking of cell and discal and postdiscal white markings are broader or longer. Hindwing: the discal and postdiscal white bands are broader. Underside—Hindwing: the discal white band fairly curves outwards at the costal margin.

***Thecla betulae yiliguozigounae* ssp. nov. (Figs. 25, 26)**

Holotype, ♂, LF 20 mm. Yiliguozigou, Tianshan, 1000-1500 m, grassland in forest zone. July 1981. Paratypes. 2 ♀, LF 20.5-22.5 mm. Same data as holotype.

Smaller than ssp. *coreana* Nire, 1919. ♂. Underside—Fore- and hindwing: the ground colour is more or less paler. Forewing: the black discocellular streak is prominent, the submarginal black edged white line is obvious. The reddish yellow band inside of black line becomes broad smoothly, while in ssp. *coreana*, it becomes abruptly broad near the costal margin. Hindwing: the two white lines are much distinct, their black edged lines are deep. ♀. Generally as in the male.

***Thersamonia thersamon jiadengyuensis* ssp. nov. (Figs. 27, 28)**

Holotype, ♂, LF 17 mm. Jiadengyu, Altai, 1400 m, grassland in forest zone. July 1983. Paratypes. 5 ♂, LF 15.5-19 mm, 6 ♀, LF 16-19.5 mm. Same data as holotype.

From ssp. *kurdistanica* Riley, 1921 and ssp. *alaica* Grum-Grshimailo, 1888, differs in the following points. ♂. Upperside—Fore- and hindwings: the ground colour is washed with dark greyish, but the black markings in the cell as well as discal area are distinct. Underside—Fore- and hindwings: the ground colour is greyish yellow. The white rings of almost all black markings are much remarkable. The basal area of both wings and inner marginal area of hindwing are tinged with clear blue. ♀. Upperside—Fore- and hindwings: the black markings are well developed. The basal area of both wings and inner marginal area of hindwing are tinged with clear blue as in the male. In this occasion, below we describe another new subspecies from Sajan District, USSR.

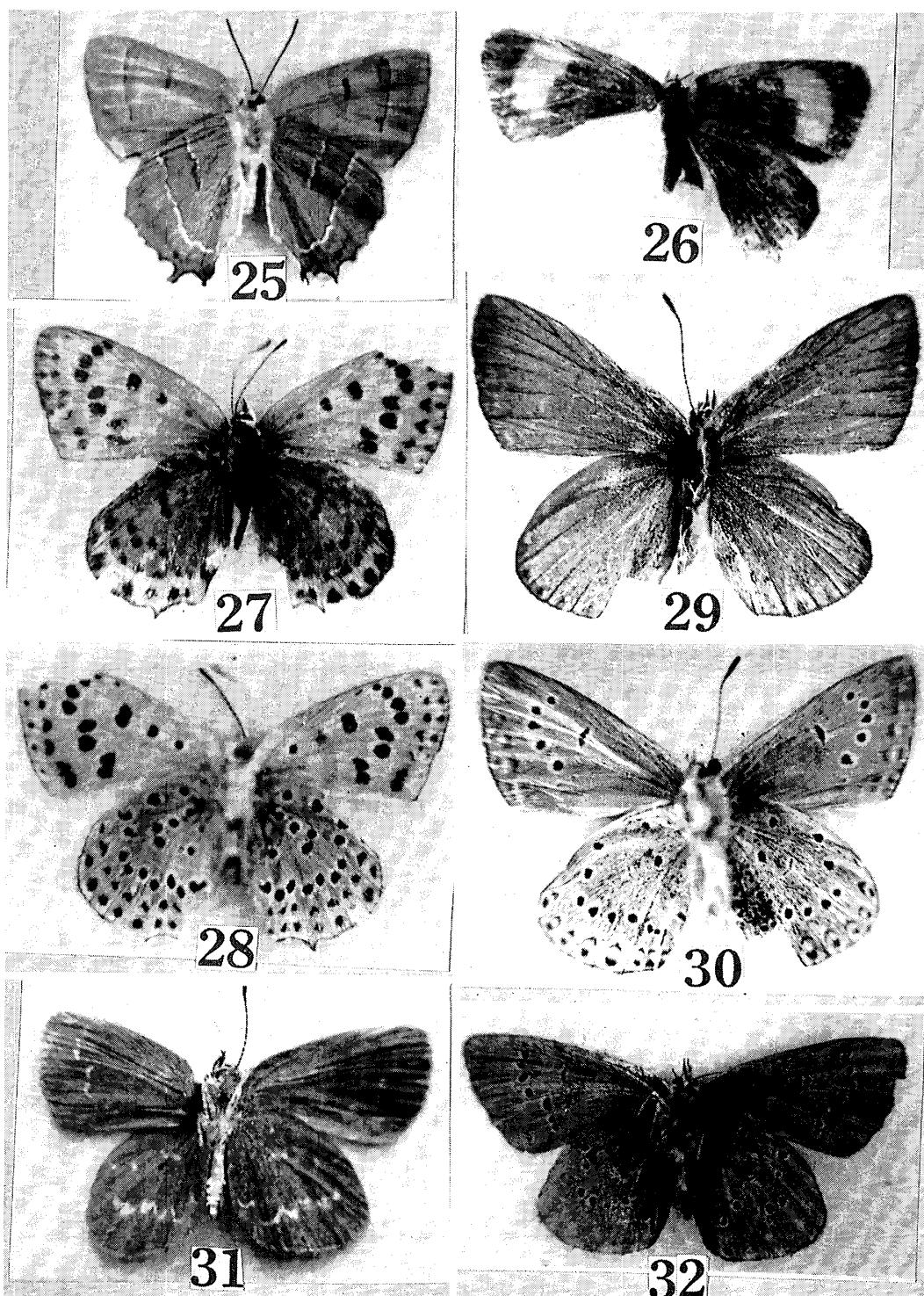


Fig. 25. *Thecla betulae yiliguozigounae* ssp. nov. ♂ 20 mm. (Underside) Fig. 26. *Do.* ♀ Fig. 27. *Thersamonia thersamon jiadengyuesis* ssp. nov. ♀ 18 mm. Fig. 28. *Do.* (Underside) Fig. 29. *Lysandra amanda altaishanica* ssp. nov. ♂ 14.5 mm. Fig. 30. *Do.* (Underside) Fig. 31. *Satyrium yiliensis* sp. nov. ♂ 14.5 mm. (Underside) Fig. 32 *Cyaniris semiargus jiadengyunus* ssp. nov. ♂ 16.5 mm. (Underside)

***Thersamonia thersamon sajanica* ssp. nov.**

Holotype, ♂, LF 15 mm. Turan, Sajan Mts., 2000 m, S.W. Irkutsk, USSR. July 1900. Paratypes. 4 ♂, LF 14-15 mm, 2 ♀, LF 19 mm. Same data as holotype. All the type specimens are preserved in Murayama's collection.

♂. Upperside—Fore- and hindwings: the ground colour is shining red, bearing minute black dots at the end of cell. The marginal black band is broader, prominent. Underside—Fore- and hindwings: the ground colour is washed with grey. All black markings are minute. ♀. Much larger. Upperside—Forewing: the marginal black band is broad as in the male. Underside—hindwing: the ground colour washed with grey, the black markings are minute.

***Lysandra amanda altaishanica* ssp. nov. (Figs. 29, 30)**

Holotype, ♂, LF 14.5 mm. Jiadengyu, Altai, 1380 m, grassland in forest zone. July 1983. Paratypes. 9 ♀, LF 14-15 mm. Same data as holotype.

Approximates to ssp. *amurensis* Staudinger, 1892, but separable from it in some characteristics. ♂ ♀. Fairly smaller. Underside—Fore- and hindwings: the ground colour is more greyish, the black markings are smaller. In the female, the marginal red markings on upperside of hindwing are less developed. In Murayama's collection, 4 males from Kurai (1500 m), Altai, USSR, are preserved. These specimens from Russian Altai seem also belonging to this new subspecies.

***Cyaniris semiargus jiadengyunus* ssp. nov. (Fig. 32)**

Holotype, ♂, LF 16.5 mm. Jiadengyu, Altai, 1380-1700 m, grassland in forest zone. July 1983. Paratypes. 3 ♂, LF 15.5-18.5 mm, 27 ♀, LF 14-18 mm. Same data as holotype.

Very similar to ssp. *kojirei* Murayama, 1957, from N. Korea, but is distinguished from it as follows. ♂ ♀. Underside—Fore- and hindwings: the black markings are well developed. The discocellular black bar of forewing is distinct. The basal blue area of hindwing spreads to inner margin.

***Satyrium yiliensis* sp. nov. (Fig. 31)**

Holotype, ♂, LF 14 mm. Yili, Tianshan, 800-1400 m, mountain grassland. 3 ♀, LF 14-15 mm. Same data as holotype.

Very similar to *S. sinensis* Alphéreky, 1882, from Sining Mts., but differs from it in the following points. ♂ ♀. Underside—Hindwing: the ground colour is paler. The submarginal waving white line becomes more fine. The marginal black spots, white discocellular streak and white marking near costal margin are smaller.

Male genitalia (Fig. II). Exceedingly resembling those of *sinensis*, but valvae, falces much longer, sharply pointed. The penis and superzonal sheath are extremely slender, and about 3 times as long as subzonal sheath.

Part II. List of butterflies in Xinjiang Province, China**PAPILIONIDAE**

1. *Papilio machaon baijianensis* Huang & Murayama, ssp. nov.
2. *Iphiclides podalirius xinyuanensis* Huang & Murayama, ssp. nov.

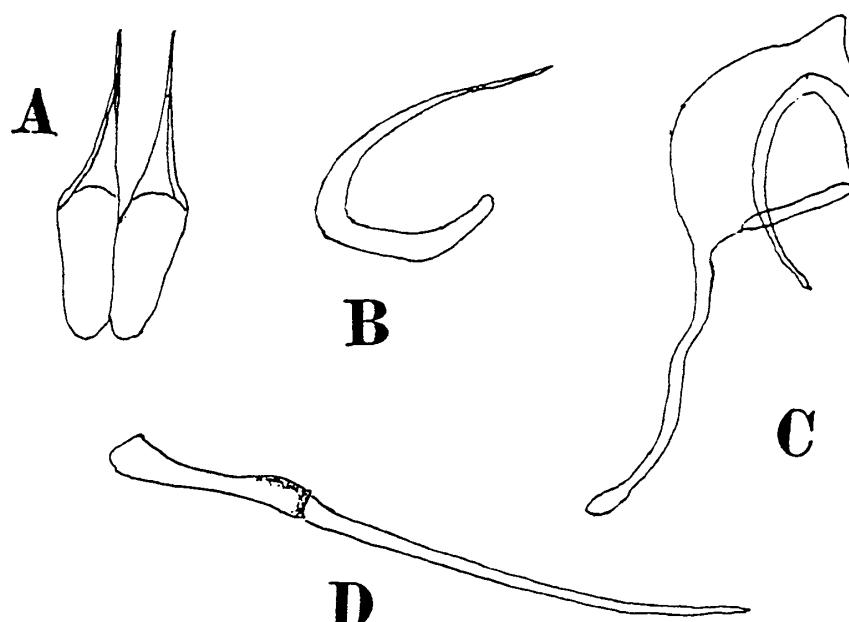


Fig. II. *Satyrium yiliensis* sp. nov., ♂ genitalia (A. valva, B. brachium, C. ring, D. phallus).

3. *Parnassius apollo khotanensis* Okano
69 ♂, LF 40-48 mm, 31 ♀, LF 41-49.5 mm. Halasi, Altai, 1380-2000 m. Grassland in forest zone. July 1985. 13 ♂, LF 41.8-44.9 mm., 6 ♀, LF 43-48 mm. Huocheng, Tianshan, 1600-2000 m. Grassland in forest zone. June 1985. 4 ♂, LF 44.5-48 mm, 1 ♀, LF 48 mm. Urumqi Nanshan. Grassland in forest zone. Subalpine grassland, 1800-2000 m. July 1981.
4. *Parnassius nomion* Fischer & Waldheim, ssp.
7 ♂, LF 23-25.5 mm, 2 ♀, LF 23-24.5 mm. 4200-4300 m. Alpine grassland. June-July 1984.
5. *Parnassius tianschanicus erebus* Verity
1 ♂, LF 39.6 mm, 1 ♀, LF 40.5 mm. Huocheng, Tianshan, 1800-2000 m. Grassland in forest zone, subalpine grassland. July 1983. 3 ♂, LF 35.5-40 mm, 1 ♀, LF 40.5 mm. Gonglaisi, Tianshan, 1800 m. Grassland in forest zone. July 1987.
The black markings in spaces 1, 5, 8 of forewing on upperside contain red patches. On the base, black scales are scattered broadly. Hindwing, the submarginal row of triangular black marking is somewhat reduced. We think that the above-mentioned characteristics apply to ssp. *erebus* Verity from Urumqi district.
6. *Parnassius prsewalskii liae* Huang & Murayama
"Nature & Insect" in Tokyo, Vol. 24, No. 4, 1989.
7. *Parnassius phoebus halasicus* Huang & Murayama, ssp. nov.
8. *Parnassius ariadne jiadengyuensis* Huang & Murayama, ssp. nov.
9. *Parnassius simo simulator* Staudinger
16 ♂, LF 20-24 mm, 11 ♀, LF 22.5-25.2 mm. Kunlun-Aljin, 4300-4400 m. High cold grassland. July 1984.

PIERIDAE

10. *Aporia crataegi* Linnaeus, ssp.
4 ♂, LF 29.5-30 mm, 4 ♀, LF 29.5-32.5 mm. Huocheng, Tianshan, 1100-1700 m.

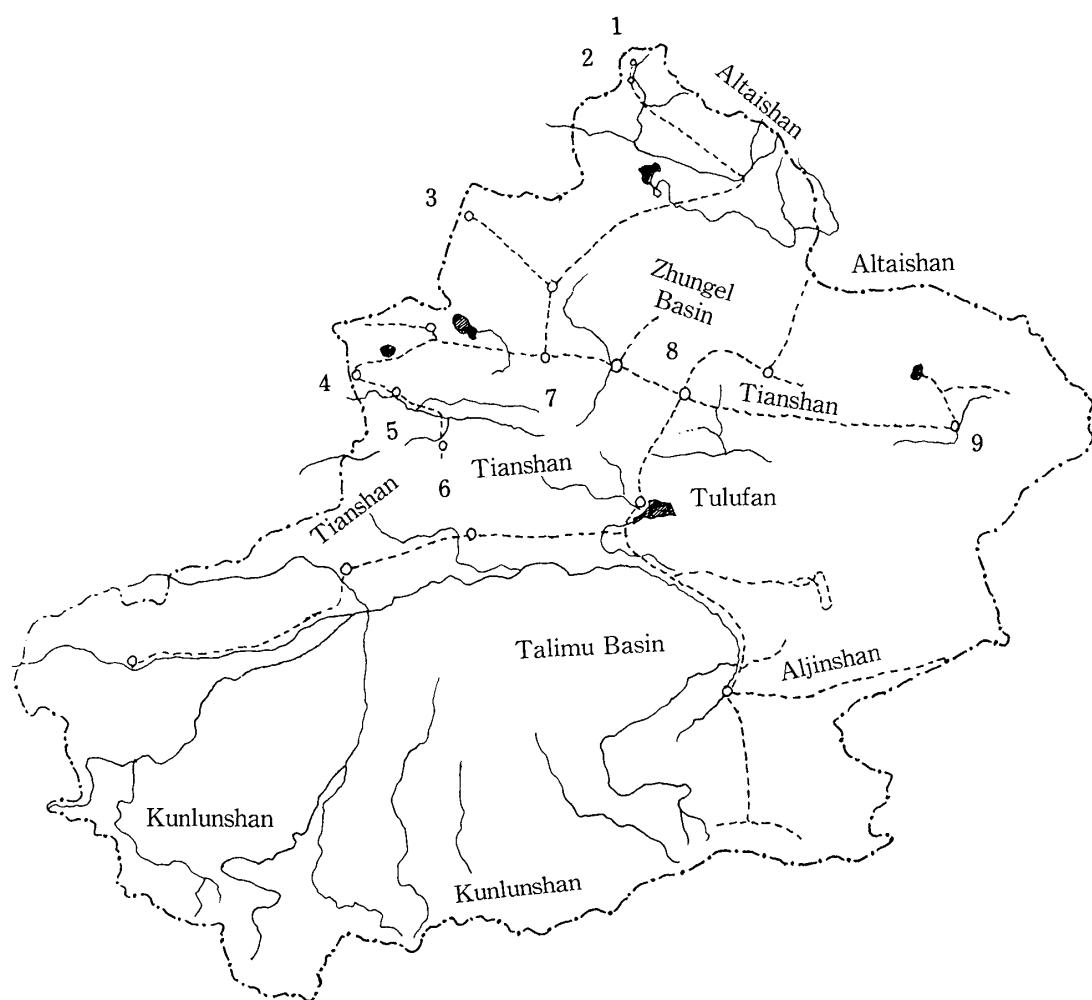


Fig. 33. Map of Xinjiang Province, China. 1. Halasi, 2. Jiadengyu, 3. Tacheng, 4. Huocheng, 5. Yili, 6. Guoliu, 7. Wusu, 8. Urumqi, 9. Hami.

Mountain grassland, broadleaf forest. Aug. 1982.

Subspecific name is still undetermined. It seems to us that the taxon is similar to ssp. *pellucida* Röber from Afghanistan, because of that the forewing is somewhat round.

11. *Aporia leucodice* Eversmann

9♂, LF 20-22.9 mm, 10♀, LF 22-23 mm. Halasi, Altai, 1400-1800 m. Grassland in forest zone. July 1980. 1♂, LF 25 mm. Huocheng, Tianshan, 1000-1800 m. Mountain grassland in forest zone. July 1980. 18♂, LF 23-25 mm, 6♀, LF 23-26.1 mm. Urumqi, Nanshan, 1700-2300 m. Grassland in forest zone. Subalpine Grassland. July 1981. 4♂, LF 20-26 mm, 5♀, LF 23-27.5 mm. Xiaoguzi, 1800-2000 m. Grassland in forest zone. July 1988.

According to individual example, the submarginal black markings of forewing and the black markings on veins of both wings on upperside are well developed or reduced.

12. *Leptidea amurensis* Ménétriès, ssp.

24♂, LF 18-22 mm, 16♀, LF 19-22 mm. Jiadengyu, Altai, 1400-1700 m, Grassland in forest zone. July 1983. 1♂, LF 22 mm. Hami, S. E. Altai, 2200-2300 m.

Mountain grassland. July 1982. 6 ♂, LF 19-22 mm, 3 ♀, LF 20-23 mm. Gongliu, Tianshan, 1300-1350 m. Wild walnut forest. May 1985.

♂. Underside—the base and costal margin of forewing, and the base and spaces 1-4, 6, 7 of hindwing are dusted with deep greenish scales. It is possible to deal as a new taxon.

13. *Baltia butleri* Moore

6 ♂, LF 16-17 mm, 9 ♀, LF 17-19 mm. Kardon, Kunlun-Aljin, 4300-4400 m. High cold grassland. July 1984.

14. *Synchloe kozlovi aljinensis* Huang & Murayama, ssp. nov.

15. *Pontia callidice halasia* Huang & Murayama, ssp. nov.

16. *Pontia daplidice* Linnaeus

89 ♂, LF 21-26 mm, 46 ♀, LF 22-26 mm. Halasi, Altai, 1400-1800 m. Mountain grassland in forest zone. July 1981. 12 ♂, LF 23-26 mm. Beidun, Altai, 400 m. Plain forestry center. July 1983. 3 ♂, LF 17-19 mm. Yumin, Tacheng, 1300 m. Mountain grassland. May 1983. 2 ♂, LF 23-25 mm. Huocheng, Tianshan, 1100-1700 m. Mountain grassland, broadleaf forest. July 1980. 1 ♂, LF 22 mm. Hejing, Tianshan, 2400 m. Mountain grassland. Aug. 1987. 5 ♂, LF 22-25 mm. Urumqi, Nanshan, Tianshan, 1800-1900 m. Grassland in forest edge. July 1981. 1 ♂, LF 23.5 mm. Zhungel Basin, 500 m. Farmland, Green Prefecture. May 1986. 1 ♂, LF 18 mm. Tulufan, -100 m. Farmland. Green Prefecture. July 1988. 2 ♂, LF 23-25 mm. Hami, S. E. Altai, 1800-2200 m. Subalpine grassland. July 1982.

17. *Pontia chlorodice* Hübner, ssp.

6 ♂, LF 19-21 mm, 4 ♀, LF 20-22.5 mm. Jiadengyu, Altai, 1380-1700 m. Grassland in forest zone. July 1983. 1 ♂, LF 22 mm. Beidun, Altai, 400 m. Plain forestry center. July 1983. 1 ♂, LF 17 mm. Tulufan, -100 m. Farmland. July 1988. 1 ♀, LF 21 mm, 3 ♀, LF 22-23 mm. Hami, S.E. Altai, 2000-2200 m. Alpine grassland. July 1982.

The white marking in cell of hindwing on underside is larger than that of the nominate subspecies.

18. *Zegris zhungelensis* Huang & Murayama, sp. nov.

19. *Anthocaris cardamines bambusaroides* Huang & Murayama, ssp. nov.

20. *Pieris brassicae nepalensis* Doubleday

4 ♂, LF 27.5-31 mm, 11 ♀, LF 30-32.5 mm. Halasi, Altai, 1400-1500 m. Grassland in forest zone. July 1985. 3 ♂, LF 26.5-28 mm, 12 ♀, LF 27-30 mm. Tacheng, 800-900 m. Farmland. May 1983. 11 ♂, LF 26-30.2 mm, 8 ♀, LF 27-32 mm. Urumqi, Nanshan, 1700-1800 m. Grassland in forest zone. July 1981. 15 ♂, LF 30-33 mm, 18 ♀, LF 29-33.5 mm. Xiaoguzi, Tianshan, 1750 m. Grassland in forest zone. July 1988. 12 ♂, LF 26-30 mm, 18 ♀, LF 26-31.5 mm. Urumqi, 500-600 m. Vegetable, Farmland. May 1983. 3 ♂, LF 28.5 mm. Zhungel Basin, 240-400 m. Farmland. May 1986. 3 ♂, LF 25.5-27 mm, 3 ♀, LF 28-30 mm. Tulufan, -100 m. Farmland. July 1985.

♂♀. The black band at apex of forewing on upperside is broader than that of Indian specimens. ♀. The black markings in spaces 1, 3 of forewing on upperside are a little smaller. It may represent another new taxon.

21. *Artogeia napi orientis* Oberthür

60 ♂, LF 19-26 mm, 4 ♀, LF 21-23 mm. Halasi, Altai, 1400-1600 m. Grassland in forest zone. Aug. 1985. 5 ♂, LF 20-21 mm, 14 ♀, LF 20-23 mm. Gongliu, Tianshan, 1300-1400 m. Wild walnut forest. July 1985. 2 ♂, LF 22-23 mm, 29 ♀, LF 19-23

mm. Gonglaisi, Tianshan, 1600–1800 m. Mountain grassland. July 1987. 32 ♂, LF 18–24 mm, 92 ♀, LF 20–27 mm. Urumqi, Nanshan, 1700–2100 m. Mountain grassland in forest zone. July 1983.

We use this subspecific name provisionally. Further research is expected.

22. *Artogeia rapae eumorpha* Fruhstorfer

45 ♂, LF 18.5–26 mm, 51 ♀, LF 19–25 mm. Halasi, Altai, 1400–1600 m. Mountain grassland in forest zone. July 1980. 16 ♂, LF 23–26 mm, 9 ♀, LF 24–26 mm. Beidun, Altai, 400–450 m. Plain forestry center. July 1983. 8 ♂, LF 18–20 mm, 1 ♀, LF 21 mm. Gongliu, Tianshan, 1200–1300 m. Mountain gassland, wild walnut forest. May 1985. 5 ♂, LF 20–22 mm, 2 ♀, LF 23–25 mm. Yumin, Tacheng, 1200–1300 m. Mountain grassland. May 1983. 21 ♂, LF 19–24 mm, 28 ♀, LF 20–26 mm. Zhungel Basin, 240–500 m. Farmland, Green Prefecture. May 1986. 25 ♂, LF 21–27 mm, 7 ♀, LF 22–26 mm. Urumqi, 500–700 m. Farmland. June 1983. 8 ♂, LF 19–24 mm, 1 ♀, LF 25 mm. Urumqi, Nanshan, 1500–1700 m. Mountain grassland. July 1981. 14 ♂, LF 20.5–25.5 m, 13 ♀, LF 18.5–24.3 mm. Kuchen, Talium Basin, 600–650 m. Farmland. June 1983. 23 ♂, LF 21–26 mm, 31 ♀, LF 23–27 mm. Yuojiang, Talium Basin, 920–950 m. Farmland. July 1984.

In this species, the use of this subspecific name is our tentative theory.

23. *Gonepteryx rhamni tianshanica* Nekrutenko

1 ♂, LF 29 mm. Halasi, Altai, 1400 m. Grassland in forest zone. July 1985. 3 ♂, LF 28.5–30 mm. Tuoli, Tacheng, 1700–1750 m. Mountain grassland. July 1983. 1 ♂, LF 29 mm. Huocheng, Tianshan, 1600 m. Grassland in forest zone. July 1983. 3 ♂, LF 28–30 mm, 3 ♀, LF 28–30 mm. Gongliu, Tianshan. Wild walnut forest.

The application of this subspecific name is provisional. ♂. Underside—the ground colour is remarkably pale, except for costal margin, the base of forewing and outer margin of hindwing. The yellowish ground colour of upperside is slightly tinged with reddish tone. It is possible to regard a new subspecies.

24. *Colias chrysotheme yangguifei* Huang & Murayama, ssp. nov.

25. *Colias alpherakyi aljinshana* Huang & Murayama, ssp. nov.

26. *Colias arida* Alpheraky

6 ♂, LF 18–19 mm, 4 ♀, LF 18.5–20 mm. Aqikfu, E. Kunlun-Aljinshan, 4350–4400 m. High cold desert mountain. July 1984.

27. *Colias erate* Esper, ssp.

46 ♂, LF 20–28 mm, 13 ♀, LF 22–26 mm. Halasi, Altai, 1400–1600 m. Grassland in forest zone. July 1985. 18 ♂, LF 21–27 mm, 1 ♀, LF 22.5 mm. Urumqi, Nanshan, 1700–1900 m. Mountain grassland in forest zone. July 1981. 22 ♂, LF 21–26 mm, 3 ♀, LF 23–24 mm. Xiaoguzi, Tianshan, 1700–1900 m. Grassland in forest zone. July 1988. 18 ♂, LF 23–27.5 mm, 2 ♀, LF 25–26 mm. Anlingu, Urumqi, 600–650 m. Farmland. July 1983. 1 ♂, LF 24 mm. Gongliu, Tianshan, 1000 m. Broadleaf forest. May 1985. 18 ♂, LF 23–27.5 mm, 8 ♀, LF 25–26 mm. Kuche, Talimu, Basin, 600 m. Farmland. Aug. 1983.

♂. Upperside—the outer marginal black band of both wings is much broad, so that it is closely allied to ssp. *afghana* Bang-Haas.

28. *Colias hyale* Linnaeus

20 ♂, LF 22–24.5 mm, 12 ♀, LF 23.5–26 mm. Gongliu, Tianshan, 1100–1200 m. Broadleaf forest. May 1985. 8 ♂, LF 21–23 mm, 5 ♀, LF 22–25 mm. Urumqi, Nanshan, 1700–2100 m. Mountain grassland in forest zone. July 1981.

It seems to us that our specimens tell the most eastern distribution of this

species.

SATYRIDAE

29. *Melanargia russiae caucasica* Nordmam

16 ♂, LF 25.5-29 mm, 14 ♀, LF 26.5-30 mm. Halasi, Altai, 1400-1800 m. Grassland in forest zone. July 1985. 1 ♂, LF 28 mm, 2 ♀, LF 27-29 mm. Huocheng Tianshan, 1700 m. Grassland in forest zone. July 1981. 1 ♂, LF 26.5 mm. Urumqi, Nanshan, 1700-2000 m. Mountain grassland. July 1981.

The first record from the Chinese Central Asia. This subspecific name is used until our further detailed research.

30. *Erebia ligea ajanensis* Ménétriès

2 ♂, LF 23-24 mm, 2 ♀, LF 24-26 mm. Halasi, Altai. 1400-1800 m. Grassland in forest zone. July 1980. 2 ♂, LF 23.5 mm, 4 ♀, LF 24-25 mm. Urumqi, Nanshan. 1700-2200 m. Mountain grassland in forest zone. July 1986.

The correct subspecific name will be given in future, according to more materials.

31. *Erebia cyclopius sinopius* Huang & Murayama, ssp. nov.

32. *Erebia theano ledieri* Goltz

55 ♂, LF 18-21.5 mm, 51 ♀, LF 18-21.5 mm. Halasi, Altai, 1400-1800 m. Grassland in forest zone. July 1983.

The fulvous markings are most developed among the subspecies of *theano*.

33. *Erebia turanica* Erschoff

18 ♂, LF 19-22 mm, 16 ♀, LF 20-22 mm. Halasi, Altai, 1400-1800 m. Grassland in forest zone. July 1985. 104 ♂, LF 18.5-23 mm, 68 ♀, LF 19-23 mm. Urumqi, Nanshan, 1700-2200 m. Mountain grassland in forest zone. July 1981.

The fulvous markings of both wings on upperside are distinct, particularly in forewing large.

34. *Chazara heydenreichii* Lederer

2 ♂, LF 31 mm. Jiadengyu, Altai, 1300 m. Grassland in forest zone. July 1983. 1 ♂, LF 24.5 mm, 1 ♀, LF 31 mm. Hami, S.E. Altai, 1800 m. Grassland in forest zone. July 1982.

35. *Chazara briseis fergana* Staudinger

3♂, LF 30-32 mm, 7♀, LF 35-37 mm. Ballukeshan, Tacheng, 1200-1300 m. Grassland in forest zone. July 1984. 1 ♂, LF 32 mm. Huocheng, Tianshan, 900-1700 m. Mountain Grassland. July 1985.

36. *Chazara anthe enervata* Staudinger

2 ♂, LF 28-28.5 mm, 1 ♀, LF 28.5 mm. Dagiao forestry center, Altai, 1500 m. Grassland in forest zone. Aug. 1983. 1 ♀, LF 31.5 mm. Jiadengyu, Altai, 1400 m. Grassland in forest zone. July 1983.

37. *Pseudochazara hyppolyte pallida* Staudinger

1 ♂, LF 24.5 mm. Dagiao forestry center, Altai, 1400 m. Grassland in forest zone. July 1983. 2 ♂, LF 21-23.5 mm, 10 ♀, LF 22-24.5 mm. Gonglaisi, Tianshan, 1700-1800 m. Mountain grassland. June 1987. 1 ♂, LF 19.5 mm. Gongliu, Tianshan, 1500 m. Mountain grassland. July 1983. 4 ♀, LF 28.5-30 mm. Hami, S.E. Altai, 1800 m. Grassland in forest zone. July 1982.

38. *Karanasa latifasciata obscurior* Avinoff & Swebadner.

2 ♂, LF 28-28.5 mm, 2 ♀, LF 28.5-30 mm. Halasi, Altai, 1300-1600 m. Grassland in forest zone. July 1985.

Owing to damaged specimens, the detailed observation is difficult.

39. *Satyrus ferula bryce* Hübner
 1 ♀, LF 28.5 mm. Jiadengyu, Altai, 1300 m. Grassland in forest zone. July 1983.

40. *Minois dryas* Scopoli, ssp.
 8 ♂, LF 25-26 mm, 9 ♀, LF 28-34 mm. Halasi, Altai, 1400-1800 m. Grassland in forest zone. July 1980. 5 ♂, LF 27-29 mm. Ballukeshan, Tacheng, 1300 m. Grassland in forest zone. July 1984.

The two ocelli of forewing on upperside are somewhat large, but the three ocelli of hindwing are minute, much faint.

41. *Kirinia eversmanni* Eversmann
 2 ♂, LF 26-27 mm, 4 ♀, LF 26-28 mm. Huocheng, Tianshan, 1300-1900 m. Mountain grassland in forest zone. July 1985.

42. *Lasiommata maera weiwuerica* Huang & Murayama, ssp. nov.

43. *Coenonympha glycerion wutaica* Murayama
 38 ♂, LF 16-18.5 mm, 14 ♀, LF 17-18.5 mm. Jiadengyu, Altai, 1380-1600 m. Grassland in forest zone. July 1987.

The ground colour of underside is more deep green than the original subspecies.

44. *Coenonympha hero perseis* Lederer
 4 ♂, LF 17-18.5 mm, 2 ♀, LF 17-18 mm. Jiadengyu, Altai, 1380-1500 m. Grassland in forest zone. July 1985.

The use of *perseis* is a tentative treatment.

45. *Coenonympha amaryllis simingica* Murayama
 30 ♂, LF 17-18.5 mm, 19 ♀, LF 16.5-19 mm. Jiadengyu, Altai, 1380-1600 m. Grassland in forest zone. July 1984.

Similar to ssp. *rinda* Ménétriers, but the ground colour of underside is deep green.

46. *Coenonympha pamphilus* Linnaeus, ssp.
 36 ♂, LF 15-18.5 mm, 9 ♀, LF 17-18.5 mm. Jiadengyu, Altai, 1400-1700 m. Grassland in forest zone. July 1983. 1 ♀, LF 18 mm. Yumin, Tacheng, 1000 m. Mountain grassland in forest zone. May 1983. 1 ♀, LF 18 mm. Hami, S.E. Altai, 1800 m. Grassland in forest zone. July 1982. 1 ♂, LF 16.5 mm. Gongliu, Tianshan, 1300 m. Grassland in forest zone. May 1985. 4 ♂, LF 16-16.5 mm, 5 ♀, LF 15-18 mm. Houocheng, Tianshan, 2200-2500 m. Alpine grassland. July 1982.

The first record from Kunlun range. Resembles to the original subspecies, but on underside, the fulvous line inside of ocellus of forewing is much faint, the base and outer marginal areas are deep green. The exact subspecies name should be further discussed.

47. *Coenonympha semenovi jiadengyuica* Huang & Murayama, ssp. nov.

48. *Coenonympha sunbecca* Eversmann
 1 ♂, LF 17 mm. Jiadengyu, Altai, 1380 m. Grassland in forest zone. July 1985.
 3 ♂, LF 18-18.5 mm, 3 ♀, LF 18 mm. Hami, S.E. Altai, 2200 m. Alpine grassland. July 1982. 4 ♂, LF 16-17 mm. Hejing, Tianshan, 2300 m. Subalpine grassland. July 1987. 1 ♀, LF 18 mm. Huocheng, Tianshan, 1800 m. Grassland in forest zone. July 1981. 23 ♂, LF 17-20 mm, 21 ♀, LF 17-18.5 mm. Urumqi, Nanshan, 1700-2100 m. Grassland in forest zone. July 1981. 3 ♀, LF 17.5-18 mm. Gonglaisi, 2300 m. May 1978.

It is a coming problem whether Aljin specimens represent a new taxon.

49. *Hyponophele lupinus* Costa
 8 ♂, LF 20-21 mm, 8 ♀, LF 21.5-24 mm. Jiadengyu, Altai, 1400-1800 m. Grassland

in forest zone. July 1983. 5 ♀, LF 20-23 mm. Hami, S.E. Altai, 1800-2200 m. Alpine grassland. July 1982. 4 ♂, LF 20-21 mm, 1 ♀, LF 21 mm. Ballukeshan, 1800 m. Subalpine grassland. July 1984. 3 ♀, LF 22-23 mm. Huocheng, Tianshan, 2200-2300 m. Subalpine and alpine grassland. July 1982. 1 ♂, LF 18 mm. Urumqi, Nanshan, 1700-2300 m. Mountain grassland. July 1981.

50. *Hyponophae interposita* Erschoff

13 ♂, LF 18.5-22 mm, 5 ♀, LF 22.5-23 mm. Halasi, Altai, 1400-1600 m. Grassland in forest zone. July 1980. 3 ♂, LF 19-21 mm, 1 ♀, LF 23 mm. Bullkeshan, Tacheng, 1300-1500 m. Grassland in forest zone. July 1984. 1 ♂, LF 20 mm. Urumqi, Nanshan, 1700-1800 m. Mountain grassland. July 1981.

51. *Triphysa phryne* Pallas

1 ♂, LF 15 mm. Usu, Tianshan, 1500 m. Mountain grassland. May 1986. 2 ♂, LF 16 mm. Zhungel Basin, 300 m. Desert. May 1987.

NYMPHALIDAE

52. *Vanessa cardui* Linnaeus

2 ♂, LF 28 mm. Jiadengyu, Altai, 1380 m. Grassland in forest zone. July 1983, 5 ♀, LF 27-32.5 mm. Halasi, Altai, 1400-1800 m. Grassland in forest zone. July 1985. 1 ♂, LF 31 mm, 1 ♀, LF 30 m. Beidun, Altai, 680 m. Plain forestry center. July 1983. 1 ♀, LF 28 mm. Hami, S. E. Altai, 2100-2300 m. Alpine grassland. July 1983. 1 ♂, LF 28 mm. Hami, S. E. Altai, 2100-2300 m. Alpine grassland. July 1982. 1 ♂, LF 29 mm. Xiaoguzi, Tianshan, 1700 m. Mountain grassland. July 1988.

53. *Vanessa xanthomelas hazara* Wyatt & Omoto

6 ♀, LF 30.5-32.5 mm, 1 ♀, LF 29.5 mm. Halasi, Altai, 1400-1800 m. Grassland in forest zone. July 1985. 10 ♂, LF 26-30 mm, 25 ♀, LF 26-35 mm. 1700-2000 m. Aiwellgou, Tianshan. Alpine grassland. June 1988. 2 ♀, LF 29 mm. Urumqi, 900 m. Farmland. May 1985.

For convenience, we applied this subspecific name.

54. *Nymphalis vanalbium* Denis & Schiffermüller

1 ♂, LF 29 mm, 2 ♀, LF 30-30.5 mm. Huocheng, Tianshan, 1100-1800 m. Mountain grassland in forest zone. July 1981.

55. *Nymphalis antiopa* Linnaeus

1 ♀, LF 30 mm, 11 ♀, LF 31.5-36.5 mm. Halasi, Altai, 1300 m. Grassland in forest zone. July 1983. 2 ♂, LF 31 mm, 4 ♀, LF 34-37 mm. Huocheng, Tianshan, 1200-1800 m. Mountain grassland in forest zone. July 1981. 1 ♀, LF 30 mm. Gongliu, Tianshan, 1300 m. Grassland in forest zone. June 1985.

56. *Aglais urticae kansuensis* Kleinschmidt

13 ♂, LF 23-27 mm, 58 ♀, LF 25-29 mm. Halasi, Altai, 1400-1800 m. Grassland in forest zone. June 1987. 9 ♂, LF 25.5-28.5 mm, 10 ♀, LF 24-28 mm. Gonglaisi, Tianshan, 1600-1800 m. Grassland in forest zone. June 1987. 21 ♂, LF 23-29 mm, 42 ♀, LF 26-29 mm. Urumqi, Nanshan, 1700-2000 m. Mountain grassland. June 1987.

57. *Polygona c-album extensa* Leech

3 ♂, LF 22-24 mm, 18 ♀, LF 23-26 mm. Halasi, Altai, 1380-1800 m. Grassland in forest zone. July 1983. 1 ♀, LF 23 mm. Hami, S.E. Altai, 2000 m. Subalpine grassland. July 1981. 2 ♀, LF 22-25 mm. Urumqi, 800 m. Farmland. Aug. 1983. 1 ♀, LF 23 mm. Kuche, Talimu, Basin, 800 m. Farmland. Aug. 1983.

The application of subspecific name should be re-examined hereafter.

58. *Issoria lathona isaea* Gray
 17 ♂, LF 19-22 mm, 4 ♀, LF 23-24.5 mm. Halasi, Altai, 1380-1800 m. Grassland in forest zone. July 1985. 1 ♂, LF 19.5 mm, 4 ♀, LF 22-26 mm. Gonglaisi, Tianshan, 1600-1800 m. grassland in forest zone. May 1987. 1 ♂, LF 23 mm. Huocheng, Tianshan, 1100-1800 m. Mountain grassland. July 1981.
 Also the application of this subspecies name is somewhat doubtful. This taxon is large in size, and the black markings on upperside are small.

59. *Mesoacidalia aglaja bessa* Fruhstorfer
 76 ♂, LF 25-30 mm, 25 ♀, LF 24-31 mm. Halasi, Altai, 1380-1800 m. Grassland in forest zone. July 1985. 11 ♂, LF 25-26.5 mm, 12 ♀, LF 24-30 mm. Hami, S. E. Altai, 2000-2200 m. Subalpine grassland. July 1982. 1 ♂, LF 27 mm, 2 ♀, LF 27-28 mm. Hejing, Tianshan, 2400 m. Alpine grassland. July 1987. 25 ♂, LF 20-29.5 mm, 7 ♀, LF 28-30 mm. Huocheng, Tianshan, 1200-1800 m. Mountain grassland. July 1981.

60. *Argynnis paphia neopaphia* Fruhstorfer
 10 ♂, LF 31.5-34.5 mm, 4 ♀, LF 34-35 mm. Huocheng, Tianshan, 1500-2200 m. Mountain grassland in forest zone. July 1981.
 On underside of hindwing, the greenish bands are somewhat narrow, the greenish white bands between them are much distinct.

61. *Argyronome laodice huochengice* Huang & Murayama, ssp. nov.

62. *Argyreus niphe* Linnaeus
 1 ♀, LF 30.6 mm. Huocheng, Tianshan, 1400 m. Mountain grassland. July 1981.

63. *Pandoriana pandora* Denis & Schiffermüller, ssp.
 1 ♂, LF 35 mm. Ballukeshan, Tacheng, 1300 m. Grassland in forest zone. July 1984.
 Because of a unique specimen, the identification of subspecies is reserved.

64. *Fabriciana niobe ornata* Staudinger
 10 ♂, LF 25.5-27.5 mm, 4 ♀, LF 25-28 mm. Halasi, Altai, 1400-1800 m. Grassland in forest zone. July 1983. 3 ♂, LF 26.5-27 mm, 4 ♀, LF 25-28 mm. Huocheng, Tianshan, 1600-1800 m. Grassland in forest zone. July 1981. 2 ♀, LF 25-27 mm. Hejing, Tianshan, 2400 m. Alpine grassland. July 1987. 2 ♂, LF 29.5 mm, 5 ♀, LF 29-32 mm. Urumqi, Nanshan, 1700-2200 m. Mountain grassland. July 1982.
 The use of this subspecific name is also uncertain.

65. *Brenthis ino paidicus* Fruhstorfer
 130 ♂, LF 17-26 mm, 24 ♀, LF 18-23 mm. Halasi, Altai, 1400-1800 m. Grassland in forest zone. July 1981. 2 ♀, LF 21 mm. Huocheng, Tianshan, 1600-2000 m. Grassland in forest zone. July 1981.

66. *Brenthis hecate alaica* Staudinger
 7 ♂, LF 20-22 mm, 3 ♀, LF 22-24 mm. Jiadengyu, Altai, 1380-1500 m. Grassland in forest zone. July 1983. 2 ♀, LF 24 mm. Huocheng, Tianshan, 1500-2000 m. Grassland in forest zone. July 1981.

67. *Boloria pales generator* Staudinger
 3 ♂, LF 19-20.5 mm, 1 ♀, LF 19.5 mm. Jiadengyu, Altai, 1880 m. Subalpine grassland. July 1983.

68. *Clossiana euphrosyne orphanoides* Huang & Murayama, ssp. nov.

69. *Clossiana selenis sibirica* Erschoff
 20 ♂, LF 19-24.5 mm, 8 ♀, LF 20-25.5 mm. Urumqi, Nanshan, 1800-2100 m. Subalpine grassland in forest zone. July 1982.

70. *Euphydryas aurinia sibirica* Staudinger
6 ♂, LF 17-19 mm, 2 ♀, LF 21.5 mm. Jiadengyu, Altai, 1400-1600 m. Grassland in forest zone. July 1983.

71. *Euphydryas intermedia mongolica* Staudinger
11 ♂, LF 17-20 mm, 13 ♀, LF 20-24 mm. Jiadengyu, Altai, 1380-1600 m. Grassland in forest zone. July 1983. 1 ♂, LF 19 mm, 1 ♀, LF 21 mm. Gonglaisi, Tianshan, 1700 m. Grassland in forest zone. July 1987.

72. *Melitaea scotosia weiwueri* Huang & Murayama, ssp. nov.

73. *Melitaea didyma* Esper, ssp.
11 ♂, LF 17-22 mm, 8 ♀, LF 21-25 mm. Halasi, Altai, 1400-1800 m. Grassland in forest zone. July 1985. 1 ♂, LF 19.5 mm, 1 ♀, LF 21 mm. Huocheng, Tianshan. 1700 m. Grassland in forest zone. July 1985. 4 ♀, LF 20-21 mm. Urumqi, Nan-shan, 1700-2300 m. Grassland in forest zone. Subalpine grassland. July 1981.
It needs further examination to determine the accurate subspecific names of *didyma* and *didymoides*. This taxon is similar to ssp. *turkestanica* Sheljuzhko, but does not agree perfectly.

74. *Melitaea didymoides* Eversmann
5 ♂, LF 20-22 m, 1 ♀, LF 24 mm. Huocheng, Tianshan, 1300-1600 m. Mountain grassland. July 1981. 3 ♂, LF 21-22 mm. Gonglaisi, Tianshan, 1700 m. July 1984.

75. *Melitaea cinxia oasis* Huang & Murayama, ssp. nov.

76. *Mellicta athalia ambigua* Ménétrière
75 ♂, LF 15-20 mm, 32 ♀, LF 15-19 mm. Halasi, 1400-1800 m. Grassland in forest zone. July-Aug. 1980.
It is interesting that our specimens are rather similar to Japanese subspecies than Korean one.

77. *Limenitis populi halasiensis* Huang & Murayama, ssp. nov.

78. *Athyra jina huochengica* Huang & Murayama, ssp. nov.

79. *Neptis rivularis sinta* Eliot
2 ♂, LF 28.5 mm. Huocheng, Tianshan, 1100-1500 m. Mountain grassland. July 1981.

LYCAENIDAE

80. *Callophrys rubi* Linnaeus, ssp.
1 ♀, LF 13.5 mm. Tuoli, Tacheng, 1400 m. Grassland in forest zone. July 1983.

81. *Cigaritis epargyros* Eversmann, ssp.
1 ♀, LF 18 mm. Beidun, Altai, 600 m. Plain forestry center. July 1983.
The correct subspecific names of above two lycaenids are undetermined, owing to the serious broken specimens.

82. *Thecla betulae yiliguozigouanae* Huang & Murayama, ssp. nov.

83. *Thersamonia thersamona jiadengyuensis* Huang & Murayama, ssp. nov.

84. *Heodes virgaureae* Linnaeus, ssp.
4 ♂, LF 16-17.5 mm, 5 ♀, LF 16-18 mm. Halasi, Altai, 1400-1800 m. Grassland in forest zone. July 1985. 1 ♂, LF 19 mm, 1 ♀, LF 20 mm. Xiaoguzi, Tianshan, 1700 m. Grassland in forest zone. July 1988.

From the nominate subspecies, we are able to indicate some different points. The black markings of underside are smaller. In female, the ground colour of hindwing on upperside is greyish yellow except for marginal orange band. But further research is needed for the exact identification.

85. *Heodes tityrus* Poda, ssp.
1 ♂, LF 18 mm, 1 ♀, LF 19.5 mm. Jiadengyu, Altai, 1400 m. Grassland in forest zone. May 1983.
The correct subspecific name is still undecided.

86. *Tongeia filicaudis* Poyer
1 ♂, LF 12.5 mm. Jiadengyu, Altai, 1400 m. Grassland in forest zone. July 1983.

87. *Scolitantides orion orithyia* Grum-Grshimailo
7 ♂, LF 13.5-14.5 mm, 5 ♀, LF 15-16 mm. Jiadengyu, Tianshan, 1400-1600 m. Grassland in forest zone. July 1983.
The subspecific name is now uncertain.

88. *Xinjiangia kumukuleensis* Huang & Murayama
4 ♂, LF 10-10.4 mm, 2 ♀, LF 10.1-10.5 mm. Aljinshan, Kunlun, 4300-4500 m. July 1984.
We described this species as a new genus and a new species in "Nature & Insect", Tokyo, Vol. 23, No. 12, 1988, but we reconsider that it is probably a synonym of "Lycaena" *luana* Evans from Tibet, which may belong to the genus *Xinjiangia*.

89. *Lysandra amanda altaishanica* Huang & Murayama, ssp. nov.

90. *Eumedonia eumedon* Esper, ssp.
9 ♂, LF 14-17 mm, 44 ♀, LF 14-17.5 mm. Jiadengyu, Altai, 1380-1700 m. Grassland in forest zone. July 1983.
Somewhat similar to the Korean specimens which were treated as ssp. *antiqua* Staudinger. But it is wrong, because of that the subspecies was described from Fergana district, Central Asia. In our present specimens, on underside, the ground colour of the basal area is deep blue. From black spot with white ring towards submarginal area, a white line runs, but ssp. *antiqua* lacks such white line. The precise identification of subspecific name is under investigation.

91. *Agrodiaetus damon* Schiffermüller, ssp.
3 ♂, LF 18-19.5 mm, 9 ♀, LF 15.5-18 mm. Halasi, Altai, 1400-1800 m. Grassland in forest zone. July 1985.
The subspecific name is undecided. The five black markings around the black discocellular streak are large. Ssp. *merzbacheri* Courvoisier from Ili-district, Central Asia is a small subspecies and does not agree with our specimens.

92. *Albulina orbitulus shanxiensis* Murayama
6 ♀, LF 10-11.5 mm. Aljinshan, 4300 m. High cold grassland. July 1984.
A little smaller than ssp. *shanxiensis* from Prov. Shanxi, but agrees with it in other points.

93. *Cyaniris semiargus jiadengyunus* Huang & Murayama, ssp. nov.

94. *Glauopsyche alexis* Poda, ssp.
1 ♀, LF 13 mm. Urumqi, 600 m. Farmland. Aug. 1983.
Detailed identification is impossible, owing to the serious broken specimen.

95. *Lycaeides subspolanus qilianshanus* Murayama
3 ♂, LF 14-16.5 mm, 2 ♀, LF 16 mm. Jiadengyu, Altai, 1380-1700 m. Grassland in forest zone. July 1983.
Smaller than Amur-Ussuri specimens as well as Japanese ones.

96. *Satyrium yiliensis* Huang & Murayama, sp. nov.

HESPERIIDAE

97. *Muschampia tessellum* Hübner, ssp.

6 ♂, LF 15.5-17 mm, 7 ♀, LF 15-17 mm. Jiadengyu, Altai, 1380-1500 m. Grassland in forest zone. Aug. 1985.

The white markings of both wings are much developed.

98. *Pyrgus seratulae uralensis* Warren

1 ♂, LF 10.5 mm, 1 ♀, LF 10.5 mm. Gongliu, Tianshan, 1300 m. Grassland in forest zone. May 1985.

The subspecific name is tentative.

99. *Pyrgus cinarae* Rambur

3 ♂, LF 13-14 mm, 3 ♀, LF 13-14 mm. Jiadengyu, Altai, 1380-1450 m. Grassland in forest zone. July 1983.

100. *Pyrgus alveus* Hübner

1 ♀, LF 12 mm. Jiadengyu, Altai, 1380 m. Grassland in forest zone. July 1983.

101. *Carcarodus boeticus* Rambur

2 ♂, LF 13 mm, 1 ♀, LF 13 mm. Jiadengyu, Altai. Grassland in forest zone. July 1983.

102. *Erynnis tages popoviana* Nordman

1 ♀, LF 12.5 mm. Jiadengyu, Altai, 1380 m. Grassland in forest zone. July 1983.

103. *Carterocephalus silvicola* Meigen

1 ♂, LF 13 mm. Jiadengyu, Altai, 1380 m. Grassland in forest zone. July 1983.

104. *Hesperia comma dilmila* Moore

1 ♂, LF 14 mm, 6 ♀, LF 13.5-17 mm. Halasi, Altai, 1400-1700 m. Grassland in forest zone. July 1985.

105. *Thymelicus lineola* Ochsenheimer

1 ♂, LF 12.5 mm, 1 ♀, LF 13 mm. Jiadengyu, Altai, 1380 m. Grassland in forest zone. July 1983.

摘要

中国新疆省ウイグル自治区の蝶類（黄人鑫・村山修一）

中国新疆省ウルムチの新疆大学生物系研究室には1980年より1989年までの間に黄人鑫教授が採集した新疆省内各地の蝶類標本が保管されており、今回黄・村山両名は共同してその調査にあたり、新疆省産蝶類目録を作成した。105種中、2新種22新亜種が含まれこれらを記載した。これに関連して隣接のサン・ヤン山脈から1新亜種もあわせて記載した。第1部はその記載に、第2部はリストに当てられている。なおこの作業は将来より完全な新疆省蝶相を明らかにするための足がかりとなるものである。

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